of the surface to be measured, [as well as]

a second optical means [(10, 10a, 10b, 10c)] aligned at a predetermined angle [(17)] to said measurement surface and which receives the light reflected *from* said measurement surface [(8)], whereby said second optical means [(10, 10a, 10b, 10c)] comprises at least one photo sensor, [(13)] which emits an electrical measurement signal [which] that is characteristic of the reflected light, [;]

a control and evaluation means [(60)] provided for the controlling of the measurement sequence and for the evaluating of the measurement results and which has at least one processor device [(60)] and at least one memory means, [(61);]

an output [() display ()] means, [(65);]

whereby said illuminating means [(3, 3a, 3b, 3c)] comprises at least one light source, [(3, 3a, 3b, 3c)] which is a light diode [(LED) (3, 3a, $3b_1$ 3c)],

whereby said light emitted from said illuminating means [(3, 3a, 3b, 3c)] is configured in such a manner that the spectral characteristic [(21, 23, 24)] comprises preferably at least blue, green and red spectral components, [and]

whereby a filter means [(6, 9)] is arranged in the path of radiation between said light source [(3, 3a, 3b, 3c)] and said photo sensor [(13) and which

changes] so as to change the spectral characteristic of the incident light [(21)] in such a way in accordance with predetermined filter properties [(22)] that the spectral characteristic [(24)] essentially approaches that of a predetermined spectral distribution [(23, 24)], and

whereby said evaluation means [(60)] evaluates said reflected light and derives at least one parameter variable therefrom which is characteristic of said surface.

2. The device [Device] according to [at least one of the preceding claims, characterized in that] claim 1, wherein said characteristic parameter of said surface is [the] gloss.

3. The device [Device] according to [at least one of the preceding claims, characterized in that] claim 1, wherein two, three or more characteristic parameters of said surface are determined.

4. The device [Device] according to [at least one of the preceding claims, characterized in that] claim 1, wherein at least one of said at least one characteristic parameter is selected from among a group of parameters which encompasses gloss, haze, distinctness of image [(DO I)] and color.

5. The device [Device] according to [at least one of the preceding claims, characterized in that] claim 5, wherein said characteristic optical parameter is

a representative measurement of the typical wavelength and amplitude [(orange peel)] of the topology of the measurement surface in a predetermined wavelength interval, whereby said evaluation may also be carried out in two or more wavelength bands.

6. The device [Device] according to [at least one of the preceding claims, characterized in that] claim 5, wherein said predetermined spectral distribution [(23)] is a standard distribution having a light type taken from among one of the standard light type groups encompassed by the C light type standard, the D65 light type standard, the A light type standard or [other similar light type standards.]

7. The device [Device] according to [at least one of the preceding claims, characterized in that] claim 1, wherein a spectral measurement characteristic is the aggregate of the spectral characteristic of the light emitted onto the measurement surface and the spectral sensitivity of the sensor in proportion to an aggregate of a spectral distribution of a light type standard and the sensitivity of the human eye.

8. The device [Device] according to [at least one of the preceding claims, characterized in that] claim 1, wherein said filter means [(6, 9)] comprises at least one or several filters [(9)] having predetermined spectral properties [(22)] so that the spectral properties of said light emitted from

said at least one light source [(3, 3a, 3b, 3c, 130)] can be specifically influenced.

9. The device [Device] according to [at least one of the preceding claims, characterized in that] claim 1, further comprising a scatter disk arrangement [(16)] and an aperture arrangement is arranged in said first optical means [(2, 2a, 2b, 2c)], whereby said scatter disk arrangement [(16)] is configured such as to allow the achieving of a homogenous illumination of said measurement surface [(8)].

10. The device [Device] according to [at least one of the preceding claims, characterized in that] claim 1, wherein said illuminating means [(3, 3a, 3b, 3c, 130)] comprises a second light source or several light sources [source(s) (3, 3a. 3b, 3c, 130)], preferably configured as light diodes, whereby preferably each of said light sources [(3, 3a, 3b, 3c, 130)] has a differing spectral characteristic [(21, 23, 24)].

11. The device [Device] according to [at least one of the preceding claims, characterized in that] claim 1, wherein said evaluation means [(60)] evaluates said measurement signal using a program stored in said memory means [(61) and/or saves said measurement signal into said memory means.

12. The device [Device] according to [at least one of the preceding claims, characterized in that] claim 1, wherein said second optical means [(10, 10a,

10b, 10c)] comprises a plurality of photo sensors [(13)] arranged adjacent to one another.

A6 cont.

13. The device [Device] according to [at least one of the preceding claims, characterized in that] claim 1, wherein at least a first part of said light emitted from said first optical means exhibits a light pattern [(50)], whereby said light pattern preferably comprises at least one light/dark edge [(52, 51)].

Sub B7

14. The device [Device] according to [at least one of the preceding claims, characterized in that] claim 1, further comprising a plurality of light/dark edges [(52, 51) are provided] of which at least one part thereof extends at least sectionally [(54)] parallel to one another and that preferably at least one section of said plurality of light/dark edges [(52, 51)] is of a form taken from a group of forms encompassing grid [(54)], cross-mesh, ellipse, circular and the like.

15. The device [Device] according to [at least one of the preceding claims, characterized in that] claim 12, wherein for at least some of said plurality of photo sensors [(13)], said evaluation means [(60)] derives at least one gradient of the measurement signal from the difference between the measurement signal of one photo sensor [(13)] and the measurement signal of a next photo sensor [(13)].

16. The device [Device] according to [at least one of

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Sub B8 end
#16 cont.

the preceding claims, characterized in that] claim 1, wherein said evaluation means [(60)] is [such] so configured that at least one average parameter for at least a portion of the gradient can be determined and a characteristic structural variable can be determined for a structure-contingent property of said surface [(8)] therefrom.

17. The device [Device] according to [at least one of the preceding claims, characterized in that said device comprises] claim 1, further comprising a third optical means [(130)] having at least one light source [(133)] emitting light at a predetermined spectral characteristic [(21, 23, 24)] and which *is* directed at a predetermined angle to said measurement surface [(8)].

18. The device [Device] according to [at least one of the preceding claims, characterized in that] claim 17, wherein said predetermined angle, [(17, 18)] at which said light emitted from said at least one of said optical means [(2, 10, 130; 2a, 10a; 2b, 10b; 2c, 10c)] is directed to the measurement surface, [(8)] is an angle selected from among a group of angles which include, in particular, the angles of 0°, 10°, 15°, 20°, 30°, 45°, 60°, 75°, 80° and 85°, and whereby said predetermined angles [(17, 18)] preferably differ between the different optical means.

Sub B9

19. The device [Device] according to [at least one of the preceding claims, characterized in that] claim

18, further comprising at least a second optical system such that [(2b, 10b) and preferably a third optical system (2c, 10c) is provided and that preferably] said optical systems are arranged at an angle of 20° [(2a, 10a)], 60° [(2b, 10b)] and 85° [(2c. 10c)].

20. The device [Device] according to [at least one of the preceding claims, characterized in that] claim 19, further comprising a third optical system in which said light emitted from said third optical means [(130)] is [preferably] directed onto the surface at such an angle that the light directly reflected from said measurement surface [(8)] in accordance with the Fresnel reflection has a different angle relative the measurement surface as the angle between said measurement surface [(8)] and the light reflected from said measurement surface [(8)] as emitted from said first optical means [(2, 2a, 2b, 2c)].

21 The device [Device] according to [at least one of the preceding claims, characterized in that] claim 20, wherein said at least one light source [(133)] of said third optical means [(130)] comprises at least one light diode [(3)] possessing spectral characteristics [(21, 23,24)] such that the color of its emitted light is white.

22. The device [Device] according to [at least one of the preceding claims, characterized in that] claim 1, wherein at least one photo sensor [(13)] has at

least two, preferably three or more, photo sensitive elements, the electrical output signals of which can be ascertained individually and which differ in their spectral characteristics, so that the color of said reflected light can be ascertained as an optical parameter of said measurement surface [(8)].

23. The device [Device] according to [at least one of the preceding claims, characterized in that] claim 20, wherein said first and/or said third optical means [(2, 2a, 2b, 2c, 130)] emits essentially parallel light.

24. The device [Device] according to [at least one of the preceding claims, characterized in that] claim 20, wherein said first and/or said third optical means [(2, 2a, 2b, 2c, 130)] emits essentially divergent or convergent light.

25. The device [Device] according to [at least one of the preceding claims, characterized in that] claim 23, wherein at least one optical means [(2, 2a, 2b, 2c, 130)] emits at least one light strip [(52)] at a predetermined length and width perpendicular to the direction of propagation.

26. The device [Device] according to [at least one of the preceding claims, characterized in that] claim 25, wherein at least one temperature measuring means is arranged as close as possible to at least

one light source [(3, 3a, 3b, 3c, 133)] and/or at least one photo sensor [(13)], provided for determining the characteristic temperature of each respective light source [(3, 3a, 3b, 3c, 133)] or respective photo sensor [(13)] for the purpose of enabling a temperature-corrected determination of at least one parameter.

27. The device [Device] according to [at least one of the preceding claims, characterized in that] claim 26, wherein at least a portion of the progression of the image of said at least one light/dark edge [(52, 51)] is defined on said plurality of photo sensors [(13)] and a characteristic surface parameter of said measurement surface [(8)] is determined from a deviation of the measured path from the ideal path.

28. The device [Device] according to [at least one of the preceding claims, characterized in that] claim 1, wherein said device [(1)] is moveable relative to the measurement surface [(8)] at an essentially constant spacing therefrom and a distance measuring means [(67)] is provided which quantitatively ascertains said relative movement and that a memory means [(61)] is furthermore provided into which the structural and/or optical parameters measured along the predetermined measurement points on the surface are stored.

29. The device [Device] according to [at least one of the preceding claims, characterized in that] claim

28, wherein at least one measurement wheel [(103, 104)] is provided which positions upon the measurement surface [(8)] during the measurement and which rotates during the relative movement between said device [(1, 100, 200)] and said measurement surface [(8)].

30. The device [Device] according to [at least one of the preceding claims, characterized in that] claim 29, wherein at least one of said at least one measurement wheel [(103, 104)] is coupled with a rotating angle output device [(67) which] that emits an electrical rotating angle signal representative of the rotation angle returned by said measurement wheel [(103, 104)].

31. A method [Method] for making quantified determinations of the quality of surfaces [, in particular when employing a device (1, 100, 200)] according to at least one of the preceding claims, in which;], said method comprising:

providing a first optical means [(2, 2a, 2b, 2c) is provided] having a first light source [(3. 3a, 3b, 3c)] disposed as a light diode [(LED) (3)] in order to direct the emitted light with preferably blue, green and red spectral components at a predetermined angle [(18)] onto a measurement surface; [(8), and]

providing a second optical means [(10, 10a, 10b, 10c) is provided] comprising at least one photo sensor [(13)] directed at a second predetermined

angle [(17)] to said measurement surface [(8)] in order to receive the light reflected from said measurement surface [(8)], whereby said at least one photo sensor [(13)] emits an electrical measurement signal which is characteristic of the received light; [, and]

providing a control and evaluation means [(60) is provided] for controlling the measurement sequence and evaluating the measurement results and which has at least one processor device [(60)] and which stores said measurement signal in a memory means; [(61), and]

providing an output [(] display [)] means [(65)] for displaying said measurement results; [,] and

evaluating [said evaluation means (60) evaluates] said reflected light and [derives] deriving at least one parameter variable therefrom which is characteristic of said measurement surface [(8)].

REMARKS

Claims 1 through 31 are pending in the present application.

Claims 1 through 31 have been amended to conform to the U.S. Rules of Practice.